



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2014**

Home Economics

Assessment Unit AS 1

assessing

Nutrition for Optimal Health

[AN111]

THURSDAY 22 MAY, MORNING

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

Section A

		AVAILABLE MARKS
1	<p>State three dietary sources of vitamin B₁₂. (AO1)</p> <ul style="list-style-type: none"> • liver • fortified breakfast cereals • milk <p>All other valid points will be given credit</p>	[3] 3
2	<p>Describe the role of iodine in the body. (AO1, AO2)</p> <ul style="list-style-type: none"> • production of the thyroid hormones which play a key role in early growth and development of organs especially the brain • thyroid hormones are involved in regulating the rate of oxidation of nutrients in the body <p>All other valid points will be given credit</p>	[4] 4
3	<p>Explain two reasons why the energy requirements for an older person may decrease with age. (AO1, AO2)</p> <ul style="list-style-type: none"> • reduction in physical activity; the energy needs of older people decrease with age due to a lack of occupational activities on retirement and a reduced load of household activities, resulting in a reduction of energy expenditure • decrease in basal metabolism; this is due to the decline in lean body mass and may itself be largely a consequence of reduced levels of physical activity <p>All other valid points will be given credit</p>	[4] 4
4	<p>Identify two types of fatty acids which we are advised to reduce in the diet and describe their effects on blood cholesterol levels. (AO1, AO2)</p> <ul style="list-style-type: none"> • saturated fatty acids; these can raise total cholesterol, especially low density lipoprotein(LDL) cholesterol • trans fatty acids; they lower good HDL and raise bad LDL cholesterol <p>All other valid points will be given credit</p>	[5] 5
5	<p>Compare the nutritional value of Quorn and red meat. (AO1, AO2)</p> <ul style="list-style-type: none"> • high quality protein; both Quorn and red meat are sources of high quality protein containing all indispensable amino acids • cholesterol; unlike red meat, Quorn is free from cholesterol and low in saturated fat • NSP; Quorn is a significant source whereas red meat does not contain NSP • iron; Quorn contains less dietary iron than red meat <p>All other valid points will be given credit</p>	[5] 5

- 6 Identify the current dietary guidelines for sugar and complex carbohydrates in the diet and consider how following this advice could benefit health.
(AO1, AO2, AO3)

Mark Band ([0]-[2])

Overall impression: basic

- inadequate knowledge and understanding of current dietary guidelines for sugar and complex carbohydrates in the diet
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider how following this advice could benefit health
- quality of written communication is basic

Mark Band ([3]-[5])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of current dietary guidelines for sugar and complex carbohydrates in the diet
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to consider how following this advice could benefit health
- quality of written communication is reasonable to good

Mark Band ([6]-[8])

Overall impression: very good to highly competent

- clear knowledge and understanding of current dietary guidelines for sugar and complex carbohydrates in the diet
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to consider how following this advice could benefit health
- quality of written communication is very good to highly competent

Examples of suitable points to be considered by the candidate:

Guidelines: average consumption of NMES should be reduced to 10% of total dietary energy; contribution of complex carbohydrates to dietary energy should be increased to 50%

Benefit to health:

- reduced risk of dental caries; sugars are the main dietary component associated with dental caries – NMES being the most commonly associated, complex carbohydrates to a lesser degree because they have to be broken down before fermentation can occur; intrinsic (found in fresh fruit) are not strongly associated as the sugars are held in the cell walls of the fruit and are not released until chewing breaks down the cells (except if this is in a juice form)
- reduced risk of type 2 diabetes; complex carbohydrates can help regulate blood sugar levels whereas a high sugar intake can lead to fluctuations in blood sugar levels and insulin resistance means that the cells of the body cannot take up the glucose
- weight management; gram for gram carbohydrate foods provide less energy than fat or alcohol and complex carbohydrates can give a feeling of fullness and satiety, therefore displacing fatty sugary snacks
- reduced risk of CVD; high blood cholesterol is associated with an increased risk of CVD, NSP may bind and trap dietary cholesterol and this may slightly reduce levels of cholesterol in the blood

All other valid points will be given credit

[8]

8

- 7 The government advises pregnant women to avoid alcohol completely. Outline some of the risks to the baby of alcohol consumption in pregnancy.
(AO1, AO2, AO3)

Mark Band ([0]-[2])

Overall impression: basic

- inadequate knowledge and understanding of the risks of alcohol consumption in pregnancy
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to outline some specific risks to the baby of alcohol consumption in pregnancy
- quality of written communication is basic

Mark Band ([3]-[5])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the risks of alcohol consumption in pregnancy
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to outline some specific risks to the baby of alcohol consumption in pregnancy
- quality of written communication is reasonable to good

Mark Band ([6]-[8])

Overall impression: very good to highly competent

- clear knowledge and understanding of the risks of alcohol consumption in pregnancy
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to outline some specific risks to the baby of alcohol consumption in pregnancy
- quality of written communication is very good to highly competent

Examples of suitable points to be outlined by the candidate:

- toxic effects; the liver cannot filter out the toxins from the alcohol, resulting in possible damage to brain cells and the nervous system of the foetus at any point during the nine months of pregnancy
- foetal alcohol spectrum disorder; an umbrella term for a wide range of mild to severe effects, including FAS which causes serious health problems for the baby, such as learning difficulties, behavioural problems and a range of physical disabilities such as heart problems, limb damage, kidney damage, damage to the structure of the brain, eye problems, hearing problems, distinctive facial characteristics
- low birth weight; there are long term health risks associated with low birth weight, e.g. susceptible to illness later in life
- increased risk of NTD; alcohol reduces folate absorption, increasing the risk of NTD

All other valid points will be given credit

[8]

AVAILABLE
MARKS

8

8 Discuss the factors that impact on hydration levels in the body. (AO1, AO2, AO3)

AVAILABLE
MARKS

Mark Band ([0]-[2])

Overall impression: basic

- inadequate knowledge and understanding of factors impacting on hydration
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss a range of factors that impact on hydration levels in the body
- quality of written communication is basic

Mark Band ([3]-[5])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of factors impacting on hydration
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to discuss a range of factors that impact on hydration levels in the body
- quality of written communication is reasonable to good

Mark Band ([6]-[8])

Overall impression: very good to highly competent

- clear knowledge and understanding of factors impacting on hydration
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to discuss a range of factors that impact on hydration levels in the body
- quality of written communication is very good to highly competent

Examples of suitable points to be discussed by the candidate:

- caffeine; is a mild diuretic but drinks which contain caffeine (coffee, tea, chocolate, cola and energy drinks) may still contribute to fluid intake under normal circumstances
- physical activity; especially when it is hot or when taking part in exercise and physical activity, the body loses water as sweat
- alcohol; alcohol is a diuretic and therefore increases the loss of urine from the body; this depends on the amount of fluid ingested with the alcohol, e.g. spirits which are stronger drinks, taken in a smaller volume, have a greater potential to dehydrate than beers which have a higher water content
- sense of thirst; this decreases with age so is a greater risk in older people, children may not respond to the sensation of thirst and become vulnerable to dehydration especially if very active, both groups may be more dependent on others for consumption of fluids

All other valid points will be given credit

[8]

8

Section A

45

Section B

AVAILABLE
MARKS

- 9 (a) Breastfeeding is the optimal method of infant feeding and is recommended worldwide. *source:www.nutrition.org.uk*

Present the arguments for breastfeeding in relation to the health of mother and baby. (AO1, AO2, AO3)

Mark Band ([0]-[3])

Overall impression: basic

- inadequate knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to present the arguments for breastfeeding in relation to the health of mother and baby
- quality of written communication is basic

Mark Band ([4]-[7])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to present the arguments for breastfeeding in relation to the health of mother and baby
- quality of written communication is reasonable to good

Mark Band ([8]-[10])

Overall impression: very good to highly competent

- clear knowledge and understanding of the health benefits of breastfeeding for mother and baby
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to present the arguments for breastfeeding in relation to the health of mother and baby
- quality of written communication is very good to highly competent

Examples of suitable points to be presented by the candidate:

For baby

- nutrition; contains all the energy, nutrients and fluids that a baby needs in the first six months of life in correct proportions
- protection; contains protective factors which provide a natural defence against infective organisms
- gastrointestinal; helps to prevent constipation and gastrointestinal effects in the baby
- educational attainment; studies show a significant and positive correlation with breastfeeding and educational attainment
- future health; can impact on future health of the baby by resulting in fewer allergies and obesity in later childhood

For mother

- weight; can help lose some of the weight gained in pregnancy
- future health; can help to reduce risk of developing pre-menopausal breast and ovarian cancer, diabetes type II and postpartum depression
- bonding; can help increase bonding between mother and baby promoting good emotional health

All other valid points will be given credit

[10]

AVAILABLE
MARKS

10

(b) Explain the importance of the following nutrients in infancy. (AO1, AO2, AO3)

- protein
- fat
- vitamin D
- zinc
- iron

Mark Band ([0]-[5])

Overall impression: basic

- inadequate knowledge and understanding of protein, fat, vitamin D, zinc and iron
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to explain the importance of these nutrients in infancy
- quality of written communication is basic

Mark Band ([6]-[10])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of protein, fat, vitamin D, zinc and iron
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to explain the importance of these nutrients in infancy
- quality of written communication is reasonable to good

Mark Band ([11]-[15])

Overall impression: very good to highly competent

- clear knowledge and understanding of protein, fat, vitamin D, zinc and iron
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to explain the importance of these nutrients in infancy
- quality of written communication is very good to highly competent

Examples of suitable points to be explained by the candidate:

protein

- the requirements are high in babies and it is almost entirely to support growth
- the infant requires more protein per unit body weight than an adult and has a particular requirement for certain indispensable amino acids

fat

- fats are an important part of an infant's diet because of their energy density, they provide a lot of energy in a small volume
- an infant's birth weight is doubled within 4-6 months and trebles within the first year
- fat provides a source of essential fatty acids, in particular n-3 which is important for development of the brain, vascular systems and retina in early months of life

vitamin D

- vitamin D requirements are high particularly in premature babies to reduce the risk of rickets;
- vitamin D assists the absorption of calcium which is crucial in proper bone development;
- breast milk is low in vitamin D therefore it is advised that a supplement is taken

zinc

- is essential for cell division and growth
- it is required for the proper functioning of the immune system

iron

- iron forms the haemoglobin in red blood cells and helps prevent anaemia, which is the most commonly reported nutritional disorder of early childhood
- low haemoglobin levels are related to a reduced supply of oxygen to the brain, thus cannot work as effectively and impairs cognitive function
- by six months an additional source of dietary iron is needed to supplement milk as the iron content present at birth has usually been used in blood cell formation at this stage

All other valid points will be given credit

[15]

15

AVAILABLE
MARKS

- 10 (a) Consider the health implications for adult men of a high energy diet and a low intake of antioxidant nutrients. (AO1, AO2, AO3)

Mark Band ([0]-[3])

Overall impression: basic

- inadequate knowledge and understanding of the health implications of a high energy diet and a low intake of antioxidant nutrients
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to consider the health implications for adult men
- quality of written communication is basic

Mark Band ([4]-[7])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of the health implications of a high energy diet and a low intake of antioxidant nutrients
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to consider the health implications for adult men
- quality of written communication is reasonable to good

Mark Band ([8]-[10])

Overall impression: very good to highly competent

- clear knowledge and understanding of the health implications of a high energy diet and a low intake of antioxidant nutrients
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to consider the health implications for adult men
- quality of written communication is very good to highly competent

Examples of suitable points to be considered by the candidate:

Energy

- obesity; if men do not control their food consumption then their energy (calories) intake will be exceeded, extra fat stored around the waist, referred to as abdominal fat or central obesity in turn increases the risk of high cholesterol, developing diabetes type II, certain cancers and high blood pressure
- heart disease; this distribution of body fat in men increases risk of developing heart disease and diabetes compared to women; heart disease is the leading cause of premature death amongst men

Antioxidant nutrients

- lycopene; a red pigment in tomatoes has antioxidant properties; higher plasma lycopene levels are associated with reducing risk of prostate cancer which is the third most common type of cancer in men in the world today
- selenium; may also protect against prostate cancer, selenium is a mineral that forms an essential component of some enzymes that are an important part of the body's antioxidant defence against cell damage that could lead to cancer

All other valid points will be given credit

[10]

10

- (b) Surveys of nutritional status frequently demonstrate chronic shortages of iron, calcium and folate, not only in a woman's earlier years but extending through into later life. *source:www.eufic.org*

Discuss the importance of iron, calcium and folate for adult women.
(AO1, AO2, AO3)

Mark Band ([0]-[5])

Overall impression: basic

- inadequate knowledge and understanding of iron, calcium and folate
- demonstrates a limited ability to apply appropriate knowledge and understanding to the question
- demonstrates a limited ability to discuss the importance of these nutrients for adult women
- quality of written communication is basic

Mark Band ([6]-[10])

Overall impression: reasonable to good

- reasonable to good knowledge and understanding of iron, calcium and folate
- demonstrates a reasonable to good ability to apply appropriate knowledge and understanding to the question
- demonstrates a reasonable to good ability to discuss the importance of these nutrients for adult women
- quality of written communication is reasonable to good

Mark Band ([11]-[15])

Overall impression: very good to highly competent

- clear knowledge and understanding of iron, calcium and folate
- demonstrates a very good to highly competent ability to apply appropriate knowledge and understanding to the question
- demonstrates a very good to highly competent ability to discuss the importance of these nutrients for adult women
- quality of written communication is very good to highly competent

Examples of suitable points to be discussed by the candidate:

Iron

- avoid iron deficiency anaemia; women experience anaemia much more commonly than men because the iron lost in blood during menstruation is not always replaced adequately from the diet, physical symptoms include fatigue, apathy, loss of appetite, poor temperature regulation, brittle nails, these symptoms affect general well being, appearance and work performance

Calcium

- improve bone health; after the age of 35, both men and women start losing calcium from their bones; during menopause the rate of loss increases rapidly for women due to decreased oestrogen production, it is therefore vital that calcium levels are sufficient during this period if women are to avoid major skeletal problems
- reduce pre-menstrual tension (PMT); several recent studies have also shown a link between increased calcium intake and reduced levels of pre-menstrual symptoms is important for women of all ages

- regulate blood pressure; some adult women are advised to take calcium supplements during pregnancy if they are at risk of hypertension

Folate

- prevent neural tube defects in pregnancy; it is recommended that all women of childbearing age, especially those planning a pregnancy or who are in the early stages of pregnancy, take a daily supplement of 0.4mg folic acid as it is difficult to achieve this amount of additional folate by diet alone, to help prevent neural tube defects
- reduce risk of CVD; together with vitamins B₆ and B₁₂, folate is involved with the maintenance of normal blood homocysteine levels; raised blood homocysteine may be a risk factor for developing heart disease and stroke

All other valid points will be given credit

[15]

AVAILABLE MARKS
15
25
70

